

**PATENT APPLICATION**  
**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

Docket No: Q80838

Koji SHIRAKAWA, et al.

Appln. No.: 10/812,074

Group Art Unit: 1752

Confirmation No.: 3020

Examiner: Sin J. Lee

Filed: March 30, 2004

For: POSITIVE RESIST COMPOSITION

**SECOND SUPPLEMENTAL DECLARATION UNDER 37 C.F.R. § 1.132**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Koji Shirakawa, hereby declare and state:

I am a co-inventor of the present application and the same Koji Shirakawa who has previously submitted a Declaration and Supplemental Declaration Under 37 C.F.R. § 1.132 in this application. My education and experience are as stated in my prior Declarations.

I am familiar with the Office Action mailed February 23, 2007.

In the Action, the Examiner states that my Supplemental Declaration signed November 17, 2007 and filed November 21, 2007 was carefully considered but was found to be unpersuasive.

In this regard, the Examiner agrees that, as stated in my Supplemental Declaration, making a rectangular profile is a significant effect because deterioration in device performance may occur due to a tapered profile shape.

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However, the Examiner states, my previous Declaration signed May 26, 2006 and filed June 7, 2006 merely records the pattern profile results as "slight taper" versus "rectangle," which are relative terms without any actual measurement of the degree of taper. The Examiner asks: By "rectangle," do I mean exactly 90°? The Examiner also asks: By "slight taper," do I mean 89.9° or 80° or 70°? The Examiner states that in order to evaluate whether the difference in terms of pattern profile between the present invention and Nishiyama is significant, one first needs to know what exactly the degree of difference is.

Also, the Examiner states, it is not clear from my previous Declaration what the resin B-5' and resin B-5" exactly are. The Examiner notes that my Declaration simply states that those resins were prepared respectively based on the working Examples of the present invention, but it never defines or shows the structure of those resins. Thus, the Examiner says, there is no way of knowing whether the comparison made was legitimate.

The purpose of the present Declaration is to provide the additional information requested by the Examiner with regard to (1) the pattern profile results and (2) the resins B-5' and B-5".

#### Pattern Profiles

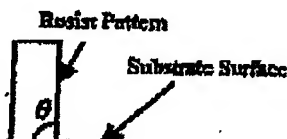
Profile can be confirmed by measuring the angle  $\theta$  of the cross-section profile. The submitted evaluations from my initial Declaration fall within the following definitions:

Rectangle: beyond 87.5 degrees to 90.0 degrees or less

Slight Taper: beyond 85.0 degrees to 87.5 degrees or less

Taper: 85 degrees or less

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**Structures of Resins B-5' and B-5''**

The previously submitted data, in my initial Declaration, pertain to an embodiment using Resin B-5 from Example 9 of Nishiyama et al as a Comparative Example, and to embodiments using Resin B-5' and Resin B-5'' which were prepared by changing only the weight average molecular weight of Resin B-5 as Examples of the invention. See page 2 of my initial Declaration. In Table A at page 3 of my initial Declaration, the other symbols (i.e., for the PAG, additive, surfactant and solvent) are according to Nishiyama et al, but the evaluation conditions (the results being reported in Table B) were according to the present application. The structure of Resin B-5 is the formula (IV-43) of Nishiyama et al. Because Resin B-5' and Resin B-5'' were made by changing the base resin of Nishiyama et al (using base resins having weight average molecular weights Mw of 2,500 and 4,000 in place of the base resin having an Mw of 17,000, respectively), the structures of Resins B-5' and B-5'' are the same as the formula (IV-43).

I would also like to clarify a statement in my initial Declaration. At page 2, it is stated that "In Example 1 and 2 in Table A below, an alkali-soluble resin B-5' and an alkali-soluble resin B-5'' were prepared respectively based on the working examples of the present invention by using a base resin have a weight average molecular weight of 2,500 and a base resin having a weight average molecular weight of 4,000 in place of the base resin having a weight average

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molecular weight of 17,000." The resins B-5' and B-5" were prepared as described in my initial Declaration and in this Supplemental Declaration, and not based on the working Examples of the present application.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: May 17 2007

Koji Shirakawa  
Koji Shirakawa